

SPECIFICATION FOR CHROMIUM AND CHROMIUM-NICKEL STAINLESS STEEL PLATE, SHEET, AND STRIP FOR PRESSURE VESSELS AND FOR GENERAL APPLICATIONS



SA-240/SA-240M



(Identical with ASTM Specification A 240/A 240M-04)

1. Scope

1.1 This specification covers chromium, chromium-nickel, and chromium-manganese-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications.

1.2 The values stated in either inch-pound units or SI units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.3 This specification is expressed in both inch-pound and SI units. However, unless the order specifies the applicable “M” specification designation (SI units), the material shall be furnished in inch-pound units.

2. Referenced Documents

2.1 ASTM Standards:

- A 370 Test Methods and Definitions for Mechanical Testing of Steel Products
- A 480/A 480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- A 923 Test Methods for Detecting Detrimental Intermetallic Phase in Wrought Duplex Austenitic/Ferritic Stainless Steels
- E 112 Test Methods for Determining Average Grain Size
- E 527 Practice for Numbering Metals and Alloys (UNS)

2.2 SAE Standard:

- J 1086 Practice for Numbering Metals and Alloys (UNS)

3. General Requirements

3.1 The following requirements for orders for material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 480/A 480M.

- 3.1.1** Definitions,
- 3.1.2** General requirements for delivery,
- 3.1.3** Ordering information,
- 3.1.4** Process,
- 3.1.5** Special tests,
- 3.1.6** Heat treatment,
- 3.1.7** Dimensions and permissible variations,
- 3.1.8** Workmanship, finish and appearance,
- 3.1.9** Number of tests/test methods,
- 3.1.10** Specimen preparation,
- 3.1.11** Retreatment,
- 3.1.12** Inspection,
- 3.1.13** Rejection and reheating,
- 3.1.14** Material test report,
- 3.1.15** Certification, and
- 3.1.16** Packaging, marking, and loading.

4. Chemical Composition

4.1 The steel shall conform to the requirements as to chemical composition specified in Table 1, and shall conform to applicable requirements specified in Specification A 480/A 480M.

5. Mechanical Properties

5.1 The material shall conform to the mechanical properties specified in Table 2.

5.2 When specified by the purchaser, Charpy impact tests shall be performed in accordance with Supplementary Requirement S1.

6. Materials for High-Temperature Service

6.1 The austenitic *H* Types shall conform to an average grain size of ASTM No. 7 or coarser as measured by Test

Methods E 112.

6.2 Supplementary Requirement S2 shall be invoked when non-H grade austenitic stainless steels are ordered for ASME Code applications for service above 1000°F [540°C].

6.3 Grade S31060, unless otherwise specified in the purchase order, shall conform to an average grain size of ASTM No. 7 or coarser, as measured by Test Methods E 112.

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel)												
N08020	...	0.07	2.00	0.045	0.035	1.00	19.00-21.00	32.0-38.0	2.00-3.00	...	3.0-4.0	Cb 8 x C min, 1.10 max
N08367	...	0.030	2.00	0.040	0.030	1.00	20.0-22.0	23.5-25.5	6.0-7.0	0.18-0.25	0.75	Fe ^H 39.5 min
N08800	800 ^G	0.10	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	...	...	0.75	Al 0.15-0.60
N08810	800 ^H	0.05-0.10	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	...	...	0.75	Ti 0.15-0.60
N08811	...	0.06-0.10	1.50	0.040	0.015	1.00	19.0-23.0	30.0-35.0	...	...	0.75	Fe ^H 39.5 min
N08904	904L ^G	0.020	2.00	0.045	0.035	1.00	19.0-23.0	23.0-28.0	4.0-5.0	0.10	1.0-2.0	Ti 0.15-0.60
N08926	...	0.020	2.00	0.030	0.010	0.50	19.0-21.0	24.0-26.0	6.0-7.0	0.15-0.25	0.5-1.5	Al 0.15-0.60
S31277	...	0.020	3.00	0.030	0.010	0.50	20.5-23.0	26.0-28.0	6.5-8.0	0.30-0.40	0.50-1.50	Fe ^H 39.5 min
S20100	201	0.15	5.5-7.5	0.060	0.030	1.00	16.0-18.0	3.5-5.5	...	0.25	...	Ti 0.15-0.60
S20103	...	0.03	5.5-7.5	0.045	0.030	0.75	16.0-18.0	3.5-5.5	...	0.25	...	Al 0.15-0.60
S20153	...	0.03	6.4-7.5	0.045	0.015	0.75	16.0-17.5	4.0-5.0	...	0.10-0.25	1.00	Fe ^H 39.5 min
S20161	...	0.15	4.0-6.0	0.040	0.040	3.0-4.0	15.0-18.0	4.0-6.0	...	0.08-0.20	...	Al 0.15-0.60
S20200	202	0.15	7.5-10.0	0.060	0.030	1.00	17.0-19.0	4.0-6.0	...	0.25	...	Ti 0.15-0.60
S20400	...	0.030	7.0-9.0	0.040	0.030	1.00	15.0-17.0	1.50-3.00	...	0.15-0.30	...	Al 0.15-0.60
S20910	XM-19 ^J	0.06	4.0-6.0	0.040	0.030	0.75	20.5-23.5	11.5-13.5	1.50-3.00	0.20-0.40	...	Cb 0.10-0.30
S21400	XM-31 ^J	0.12	14.0-16.0	0.045	0.030	0.30-1.00	17.0-18.5	1.0	...	0.35 min	...	V 0.10-0.30
S21600	XM-17 ^J	0.08	7.5-9.0	0.045	0.030	0.75	17.5-22.0	5.0-7.0	2.00-3.00	0.25-0.50	...	...
S21603	XM-18 ^J	0.03	7.5-9.0	0.045	0.030	0.75	17.5-22.0	5.0-7.0	2.00-3.00	0.25-0.50	...	...
S21800	...	0.10	7.0-9.0	0.060	0.030	3.5-4.5	16.0-18.0	8.0-9.0	...	0.08-0.18	...	...
S24000	XM-29 ^J	0.08	11.5-14.5	0.060	0.030	0.75	17.0-19.0	2.3-3.7	...	0.20-0.40	...	...
S30100	301	0.15	2.00	0.045	0.030	1.00	16.0-18.0	6.0-8.0	...	0.10	...	...
S30103	301L ^G	0.03	2.00	0.045	0.030	1.00	16.0-18.0	6.0-8.0	...	0.20	...	...
S30153	301LN	0.03	2.00	0.045	0.030	1.00	16.0-18.0	6.0-8.0	...	0.07-0.20	...	...
S30200	302	0.15	2.00	0.045	0.030	0.75	17.0-19.0	8.0-10.0	...	0.10	...	...
S30400	304	0.08	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	...	0.10	...	...
S30403	304L	0.030	2.00	0.045	0.030	0.75	18.0-20.0	8.0-12.0	...	0.10	...	...
S30409	304H	0.04-0.10	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	...	...	...	...
S30415	...	0.04-0.06	0.80	0.045	0.030	1.00-2.00	18.0-19.0	9.0-10.0	...	0.12-0.18	...	Ce 0.03-0.08
S30451	304N	0.08	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	...	0.10-0.16	...	...
S30452	XM-21 ^J	0.08	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	...	0.16-0.30	...	...
S30453	304LN	0.030	2.00	0.045	0.030	0.75	18.0-20.0	8.0-12.0	...	0.10-0.16	...	...
S30500	305	0.12	2.00	0.045	0.030	0.75	17.0-19.0	10.5-13.0	...	...	...	...
S30600	...	0.018	2.00	0.020	0.020	3.7-4.3	17.0-18.5	14.0-15.5	0.20	...	0.50	...
S30601	...	0.015	0.50-0.80	0.030	0.013	5.00-5.60	17.0-18.0	17.0-18.0	0.20	0.050	0.35	...
S30615	...	0.16-0.24	2.00	0.030	0.030	3.2-4.0	17.0-19.5	13.5-16.0	...	...	...	Al 0.8-1.5
S30815	...	0.05-0.10	0.80	0.040	0.030	1.40-2.00	20.0-22.0	10.0-12.0	...	0.14-0.20	...	Ce 0.03-0.08
S30908	309S	0.08	2.00	0.045	0.030	0.75	22.0-24.0	12.0-15.0	...	...	...	...
S30909	309H ^G	0.04-0.10	2.00	0.045	0.030	0.75	22.0-24.0	12.0-15.0	...	...	...	...
S30940	309Cb ^G	0.08	2.00	0.045	0.030	0.75	22.0-24.0	12.0-16.0	...	...	...	Cb 10 x C min, 1.10 max
S30941	309HCb ^G	0.04-0.10	2.00	0.045	0.030	0.75	22.0-24.0	12.0-16.0	...	...	...	Cb 10 x C min, 1.10 max
S31008	310S	0.08	2.00	0.045	0.030	1.50	24.0-26.0	19.0-22.0	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phos- phorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Con't)												
S31009	310H ^G	0.04-0.10	2.00	0.045	0.030	0.75	24.0-26.0	19.0-22.0	...	...	...	...
S31040	310Cb ^G	0.08	2.00	0.045	0.030	1.50	24.0-26.0	19.0-22.0	...	...	...	Cb 10 × C min, 1.10 max
S31041	310HCb ^G	0.04-0.10	2.00	0.045	0.030	0.75	24.0-26.0	19.0-22.0	...	...	...	Cb 10 × C min, 1.10 max
S31050	310MoLN ^G	0.020	2.00	0.030	0.010	0.50	24.0-26.0	20.5-23.5	1.60-2.60	0.09-0.15	...	...
S31060	...	0.05-0.10	1.00	0.040	0.030	0.50	22.0-24.0	10.0-12.5	...	0.18-0.25	...	Ce + La 0.025- 0.070 B 0.001- 0.010
S31254	...	0.020	1.00	0.030	0.010	0.80	19.5-20.5	17.5-18.5	6.0-6.5	0.18-0.22	0.50-1.00	...
S31266	...	0.030	2.00-4.00	0.035	0.020	1.00	23.0-25.0	21.0-24.0	5.2-6.2	0.35-0.60	1.00-2.50	W 1.50-2.50
S31600	316	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	...
S31603	316L	0.030	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	...
S31609	316H	0.04-0.10	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	...	...	...
S31635	316Ti ^G	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	Ti 5 × (C + N) min, 0.70 max
S31640	316Cb ^G	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	Cb 10 × C min, 1.10 max
S31651	316N	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10-0.16	...	...
S31653	316LN	0.030	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10-0.16	...	...
S31700	317	0.08	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10	...	...
S31703	317L	0.030	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10	...	...
S31725	317LM ^G	0.030	2.00	0.045	0.030	0.75	18.0-20.0	13.5-17.5	4.0-5.0	0.20	...	...
S31726	317LMN ^G	0.030	2.00	0.045	0.030	0.75	17.0-20.0	13.5-17.5	4.0-5.0	0.10-0.20	...	...
S31753	317LN ^G	0.030	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10-0.22	...	...
S32050	...	0.030	1.50	0.035	0.020	1.00	22.0-24.00	20.0-23.00	6.0-6.8	0.21-0.32	0.40	...
S32100	321	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-12.0	...	0.10	...	Ti 5 × (C + N) min, 0.70 max
S32109	321H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-12.0	...	...	...	Ti 4 × (C + N) min, 0.70 max
S32615	...	0.07	2.00	0.045	0.030	4.8-6.0	16.5-19.5	19.0-22.0	0.30-1.5	...	1.50-2.50	...
S32654	...	0.020	2.00-4.00	0.030	0.005	0.50	24.0-25.0	21.0-23.0	7.0-8.0	0.45-0.55	0.30-0.60	...
S33228	...	0.04-0.08	1.00	0.020	0.015	0.03	26.0-28.0	31.0-33.0	...	...	...	Ce 0.05-0.10 Cb 0.6-1.0 Al 0.025
S33400	334 ^G	0.08	1.00	0.030	0.015	1.00	18.0-20.0	19.0-21.0	...	...	...	Al 0.15-0.60 Ti 0.15-0.60
S34565	...	0.030	5.0-7.0	0.030	0.010	1.00	23.0-25.0	16.0-18.0	4.0-5.0	0.40-0.60	...	Cb 0.10
S34700	347	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb 10 × C min, 1.00 max
S34709	347H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb 8 × C min, 1.00 max
S34800	348	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 10 × C min, 1.00 max Ta 0.10 max Co 0.20

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS, %^A (CONT'D)

UNS Designation ^B	Type ^C	Carbon ^D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^{E, F}
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel) (Cont'd)												
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	Cb + Ta 8 × C min, 1.00 max Ta 0.10 max Co 0.20
S35045	...	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	...	...	0.75	Al 0.15-0.60 Ti 0.15-0.60
S35135	...	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	...	0.75	Ti 0.40-1.00
S35315	...	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-36.0	...	0.12-0.18	...	Ce 0.03-0.08
S38100	XM-15 ^J	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	...	...	...	...
S38815	...	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	...	0.75-1.50	Al 0.30
Duplex (Austenitic-Ferritic)												
S31200	...	0.030	2.00	0.045	0.030	1.00	24.0-26.0	5.5-6.5	1.2-2.0	0.14-0.20	...	...
S31260	...	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	0.20-0.80	W 0.10-0.50
S31803	...	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	...	...
S32001	...	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	...
S32003	...	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	...	...
S32101	...	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	...
S32205	2205 ^G	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	...	...
S32304	2304 ^G	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	...	...
S32520	...	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	...
S32550	255 ^G	0.04	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	...
S32750	2507 ^G	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50	...
S32760 ^K	...	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	W 0.50-1.00
S32900	329	0.08	1.00	0.040	0.030	0.75	23.0-28.0	2.5-5.0	1.00-2.00	...	...	...
S32906	...	0.030	0.80-1.50	0.030	0.030	0.50	28.0-30.0	5.8-7.5	1.50-2.60	0.30-0.40	0.80	...
S32950	...	0.030	2.00	0.035	0.010	0.60	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	...	...
Ferritic or Martensitic (Chromium)												
S32803	...	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.020 (C + N) 0.030	...	Cb 12 × (C + N) min, 0.15-0.50
S40500	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	...	...	...	Al 0.10-0.30
S40900 ^L	409 ^L	...	...	...	...	...	...	...	...	...	...	...
S40910	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 6 × (C + N) min, 0.50 max; Cb 0.17
S40920	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	Ti 8 × (C + N) min, Ti 0.15-0.50; Cb 0.10
S40930	...	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	...	0.030	...	(Ti + Cb) [0.08 + 8 × (C + N)] min, 0.75 max; Ti 0.05 min
S40945	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	...	0.030	...	Cb 0.18-0.40
S40975	...	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50-1.00	...	0.030	...	Ti 0.05-0.20
S40977	...	0.030	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	...	0.030	...	Ti 6 × (C + N) min, 0.75 max
S41000	410	0.08-0.15	1.00	0.040	0.030	1.00	11.5-13.5	0.75	...	...	...	...